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A NEW SPECIES OF MATSUCOCUS ATTACKING
PINON PINE IN CALIFORNIA

(Homoptera; Coccoidea; Margarodidae)

by

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The Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, has for the past four years been conducting biological and seasonal history studies on certain species of Matsucoccus occurring on the genus Pinus in the western part of the United States. Through these studies it has been possible to become rather well acquainted with the complex developmental stages of various forms of this genus. For this reason permission has been given to the present writer, by authorities of the National Museum at Washington, D. C., as well as those of the Bureau of Entomology and Plant Quarantine, Division of Insect Identification and Forest Insect Investigations, to study taxonomically the western United States Matsucoccus, in conjunction with the biological studies. One species of Matsucoccus attacking piñon pine, Pinus monophylla, in California, has been dealt with sufficiently to call for a technical description of it. The species is described below.

For a more definite characterization of the genus Matsucoccus, and other details of structure as well as relationship of this genus to other coccids and for descriptions of new forms, reference should be made to two papers by F. B. Herbert (Ent. Soc. Wash., Proc. Vol. 21, No. 7, Oct. 1919, pp 157-161, and Vol. 23, No. 1, Jan. 1921, pp 15-22), and to two papers by Dr. Harold Morrison (U. S. Dept. Agr. Tech. Bull. 52, 1928, pp 43-53) and Ent. Soc. Wash., Proc. Vol. 41, No. 1, Jan. 1939, pp 1-20).

Matsucoccus monophyllae, new species

Occurring during the growing stages on the twigs of the host commonly wedged into the angle formed by twig and needle bundle, and also often times found between the thin layers of wood tissue of the sheath surrounding the needle base as well as beneath the bark scales on the stems.

Adult female. (Figure 1, A-G inclusive). As mounted, elongate ovoid to almost parallel sided, broadest across the posterior part of the abdomen; distended length, as mounted, around 2 to 3 mm., width 1 to 1½ mm. Derm membranous throughout. Antennae 9-segmented, normal for the genus, the terminal segment fairly elongate, a pair of stout sensory spines on segments 6 to 9 inclusive. Legs characteristic for the genus, normally a single stout seta on each trochanter. Mouth parts usually wanting, the area represented by a folded or wrinkled area in the derm. Spiracles present in the normal two thoracic and seven abdominal pairs, the anterior and posterior abdominal approximately the same size. Derm with a cluster of multilocular disk pores at posterior body apex, the number ranging from 28 to 44 in material tabulated; in addition with the generically characteristic conspicuous bilocular tubular ducts in transverse segmental rows across both surfaces of the body, the two complete circles immediately behind the posterior legs including a wide range of from 43 to 84 ducts. With some small setae scattered over both surfaces of body, obviously in segmental arrangement on abdomen, and in addition with a few conspicuously enlarged setae, near coxae on thorax (approximate size 30 microns), in mid-section of each segment of abdomen, those on abdomen attaining a length up to 22.8 microns, with the smallest in the same row not over 7.6 microns. Dorsal cicatrices extremely large in comparison to body size, ranging from 15.2 to 28.5 microns, circular to elliptical, usually in 6 transverse bands on median portion of dorsal surface of abdomen, averaging, by actual count, 213, with a range of from 164 to 284.

Intermediate female (preadult) (Figure 2, L). -- (Described from cast skin). Tending toward a globular form, but invariably distorted owing to pressure of adjacent plant material, length from 1 to 1½ mm., but varying considerably, the variation in part due also to effects of compression. Exposed portions of body definitely and rather strongly sclerotized, protected portions less affected. Framework of mouth parts large and conspicuous. With the normal two pairs of thoracic and seven pairs of abdominal spiracles. The tracheae entering the anterior curve of the thoracic spiracles and posterior curve of the abdominal spiracles, pore plates showing a conspicuous double-thickness band, with small pores (around 9 in thoracic and 6 in anterior abdominal spiracles).

Larva (Figure 2, H-J inclusive). Apparently characteristic for the genus; not exhibiting any recognized distinctive specific characteristics. Spiracles in 9 pairs, minute, the two thoracic appearing distinctly smaller than the abdominal owing to presence of a small but distinct cup-shaped, invaginated, sclerotized area around each abdominal spiracle.

This insect has been described from several specimens (Holotype and paratypes) of the stages mentioned on Pinus monophylla from Chuchupate Ranger Station, Los Padres National Forest, California, collected November 5, 1938, by J. E. Patterson and S. T. Carlson (Hopkins #32056). Additional paratype material has been collected from the same host and locality on April 24, 1939, by S. T. Carlson, J. E. Patterson and R. C. Hall (Hopk. #32165); and on September 31, 1939 by J. M. Miller and S. T. Carlson (Hopk. #32171). The types are deposited in the National Collection at Washington and paratypes in the Forest Insect Laboratory Collection at Berkeley, California, and the Stanford University Collection.

The arrangement and conspicuously larger size of the dorsal cicatrices as compared to the body of the adult female should make this insect definitely recognizable. This species is rather closely related to bisetosus and californicus differing principally in the larger size of the dorsal cicatrices.

Preliminary life history observations on the above collected material indicate that adult females (Figure 2, K) emerge from the overwintering pre-adult stage (Figure 2, K) during the springtime and migrate almost to the tips of twigs for oviposition, secreting a mass of shining fluffy wax threads at posterior apex of abdomen. Eggs are laid in this waxy mass. Apparently a whole year is required to complete the life cycle. Branch killing or "flagging" has been observed on piñon pines heavily infested with this scale insect.

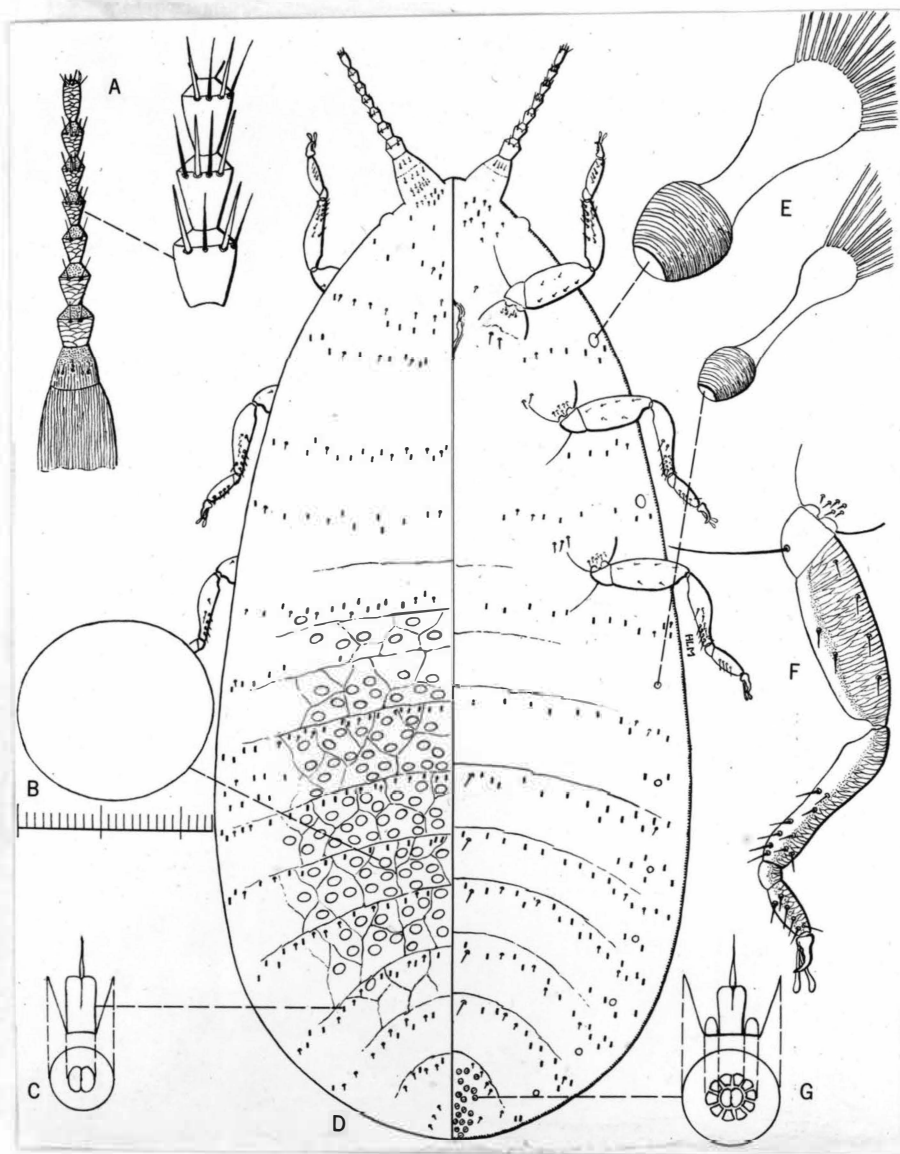


Figure 1. Adult female of Matsucoccus monophyllae, new species:
 A - antenna; B - dorsal cicatrice and micron scale to
 show approximate size; C - bilocular tubular duct;
 D - adult female, dorsal and ventral aspects; E -
 thoracic and abdominal spiracles; F - leg; and G -
 multilocular disk pore.

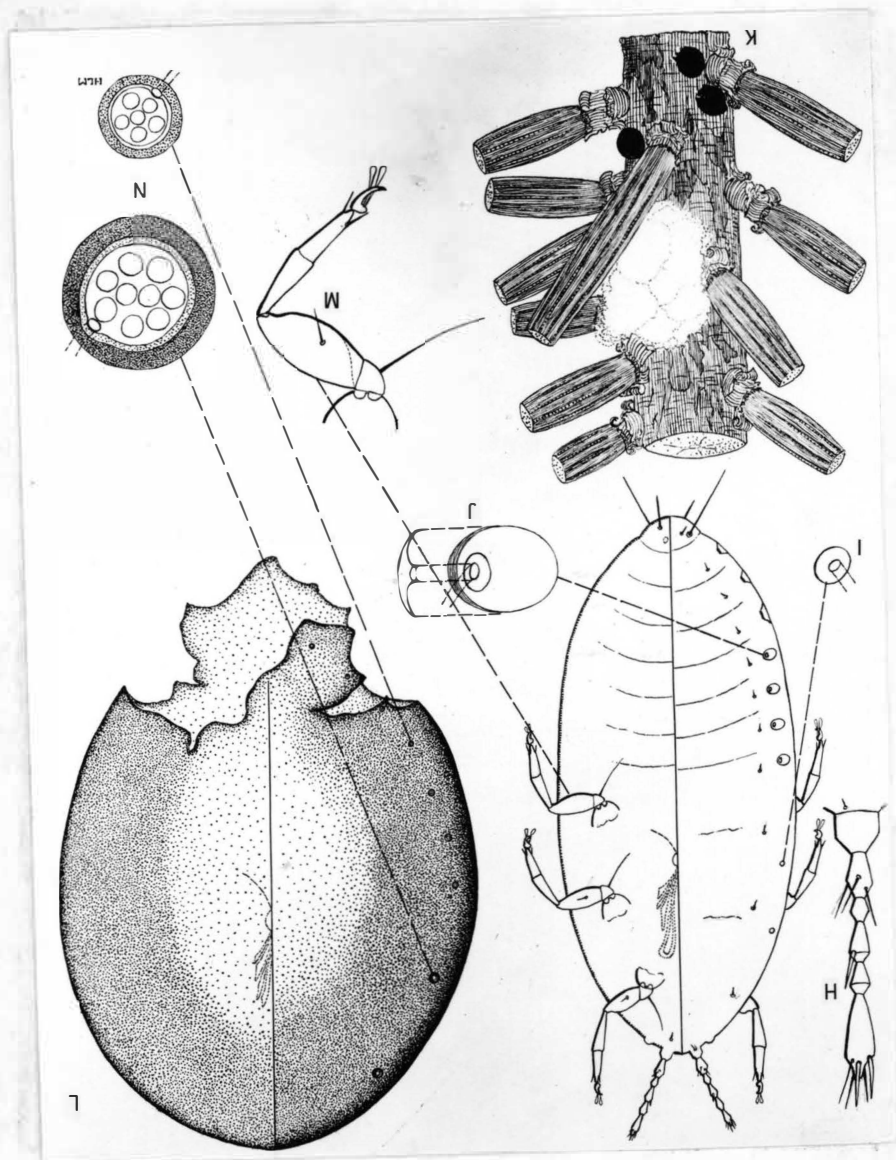


Figure 2. Matsucoccus monophyllae, new species: Larva; H - antenna; I - thoracic spiracle; J - abdominal spiracle; K - habit sketch of adult females with waxy secretions and mature black preadults; L - intermediate female (preadult); M - larva leg; N - preadult thoracic and abdominal spiracles.